Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-20. (canceled)

21.(new): A biomedical member formed from a composite ceramic including:

an alumina phase; and

a zirconia crystal phase, wherein a mean grain size of said zirconia crystal phase is 0.5 μm or smaller;

wherein said biomedical member contains a metal phase such as molybdenum, tungsten or a mixture of molybdenum and tungsten or metal oxide phase such as strontium oxide or yttrium oxide, and sintering additives.

22.(new): The biomedical member according to claim 21, wherein the mean grain size of said zirconia crystal phase is 0.35 μm or smaller, the mean grain size of said metal phase is 1 μm or smaller, the amount of the metal phase is from 5 to 25% by weight of the total, and 95% or more of said metal phase exists in the grain boundaries of said zirconia crystal phase.

23.(new): The biomedical member according to claim 21, wherein there exists an alumina phase having a mean grain size of 0.5 μm or smaller in the grain boundaries of the zirconia crystal phase and the metal phase.

24.(new): The biomedical member according to claim 21, wherein said alumina phase is contained in the amount not higher than 30% by weight.

25.(new): The biomedical member according to claim 21, including 65 to 96% by weight of said alumina phase, 4 to 34.4% by weight of said zirconia crystal phase and sintering additives containing 0.20% by weight or more silicon oxide, 0.22% by weight or more titanium oxide and 0.12% by weight or more magnesium

oxide, while the total amount of silicon oxide, titanium oxide and magnesium oxide is in a range from 0.6 to 4.5% by weight.

26.(new): The biomedical member according to claim 25, wherein a mean grain size of aluminum oxide of said alumina phase is 3 μm or smaller.

27.(new): The biomedical member according to claim 25, wherein 70% or more of zirconium oxide of said zirconia crystal phase is tetragonal crystal.

28.(new): The biomedical member according to claim 25, wherein an atomic rate Titanium/Magnesium of titanium oxide and magnesium oxide is in a range from 0.5 to 1.2.

29.(new): The biomedical member according to claim 25, wherein at least a part of the titanium oxide and magnesium oxide is dissolved in an aluminum oxide crystal so as to form a solid solution crystal, and the total amount of these materials dissolved is 0.1% by weight or more off said aluminum oxide.

30.(new): The biomedical member according to claim 25, wherein oxides of at least one of titanium and magnesium or composite oxide grains containing said oxides are dispersed in at least a part of said aluminum oxide crystal grains.

31.(new): The biomedical member according to claim 25, wherein specific wear of the sintered ceramics of said composite ceramic is 0.3×10^{-10} mm^2/N or less after being subjected to accelerated aging test conducted in saturated water vapor of 121°C for 152 hours.

32.(new): The biomedical member according to claim 21, including 65% by weight or more of said alumina phase, 4 to 34% by weight of said zirconia phase and 0.1 to 4% by weight of strontium oxide, while strontium forms a solid solution with part of said zirconium oxide grains.

33.(new): The biomedical member according to claim 32, comprising titanium oxide, magnesium oxide and silicon oxide as the sintering additives.

34.(new): The biomedical member according to claim 32, wherein said composite ceramics contains 0.20% by weight or more silicon oxide, 0.22% by weight or more titanium oxide and 0.12% by weight or more magnesium oxide, while the

total amount of silicon oxide, titanium oxide and magnesium oxide is in a range from 0.6 to 4.5% by weight.

35.(new): The biomedical member according to claim 32, wherein the aluminum oxide grains in said composite ceramics have elongated shape observed in SEM image, mean value of the largest dimensions of said aluminum oxide grains, namely the size along major axis thereof, is 1.5 μm or smaller, aspect ratio that is the ratio of the major axis size to the minor axis size of the aluminum oxide grains, namely the size along the direction perpendicular to the major axis, is 2.5 or less and a median value between the mean minor axis size and mean major axis size is 1 μm or less.

36.(new): The biomedical member according to claim 32, wherein specific wear rate of said composite ceramics is 0.3×10^{-10} mm^2/N or less after being subjected to accelerated aging test conducted in saturated water vapor of 121°C for 152 hours.

37.(new): The biomedical member according to claim 21, which constitutes a sliding member of an artificial joint, wherein said artificial joint is an artificial hip joint or an artificial knee joint, and the sliding member of said artificial joint is a femoral head or an acetabulum socket sliding member of the artificial hip joint.

38.(new): A method for producing a biomedical member that is formed from a composite ceramic including an alumina phase and a zirconia crystal phase and contains metallic component such as molybdenum, tungsten or a mixture of molybdenum and tungsten, or a metal oxide phase such as strontium oxide or yttrium oxide, and sintering additives, comprising a process for mixing raw materials that contain aluminum, zirconium, silicon, titanium, magnesium in the form of metals or compounds of metals so that the mixture of the raw materials contains 0.20% by weight or more silicon oxide, 0.22% by weight or more titanium oxide and 0.12% by weight or more magnesium oxide while the total amount of silicon oxide, titanium oxide and magnesium oxide is in a range from 0.6 to 4.5% by

weight, when contents of the metals or the compounds of the metals are converted to the contents of metal oxides, a process for forming the mixed ceramic powder into a compact in a predetermined shape and a process for sintering the compact at a temperature in a range from 1300 to 1500°C thereby to obtain a sintered ceramics.

39.(new): The method for producing the biomedical member according to claim 28, which comprises the process for sintering of the compact at a temperature in a range from 1300 to 1500°C in the oxidizing atmosphere, and a process for heat treating the sintered ceramics at a temperature at least 60°C lower than the sintering temperature in a reducing atmosphere.

40.(new): The method for producing the biomedical member according to claim 28, wherein hot isostatic treatment is applied at a temperature at least 30°C lower than said sintering temperature, after sintering.